# Multiparticle-rotor model for rotational band structure of $^{154}$Gd

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Band-crossing phenomena in the high-spin region of deformed nuclei are studied in this paper. The power of modern computers for large-matrix diagonalization (up to 17527*17527) is exploited in a multinucleon-plus-rotor model, the interesting test case of $^{154}$Gd being treated in this paper. Though a small basis set of 9-18 Nilsson orbitals is used, the strict angular momentum and particle number conservation guarantees superior orthogonal microscopic wave functions for nucleon transfer calculations. This method takes account of pairing correlations among the valence particles and shows the effects of quadrupole pairing and the usually neglected **j.j** recoil terms.

## References

[1] Published in Phys. Rev. **C52** (1995) 1407